

NOTES:

1. ALL FRANCHISE UTILITIES SHALL BE LOCATED WITHIN THE PUBLIC UTILITY EASEMENT (PUE) AS SHOWN. CONTACT RESPECTIVE UTILITY OWNER FOR LOCATION AND SPACING REQUIREMENTS BETWEEN ADJACENT UTILITIES. MAINTAIN A MINIMUM 30" COVER OVER FRANCHISE UTILITIES.
2. MAINTAIN A MINIMUM 4' COVER OVER SANITARY SEWER MAINS AND LATERALS. ALL LATERALS SHALL BE INSTALLED DURING CONSTRUCTION OF SANITARY SEWER MAINS.
3. MAINTAIN A MINIMUM 3' COVER OVER WATER MAINS AND MINIMUM 30" OVER WATER SERVICES.
4. ALL EXISTING UTILITIES SCHEDULED TO REMAIN IN SERVICE SHALL BE SUPPORTED, PROTECTED, AND MAINTAINED AT ALL TIMES. ANY EXISTING UTILITY THAT BECOMES DAMAGED SHALL BE REPAIRED OR REPLACED IMMEDIATELY TO EQUAL OR BETTER CONDITION.
5. AN INCREASE IN UTILITY SEPARATION MAY BE REQUIRED IF ANY UTILITY IS OVER 10' DEEP OR OVER 24" IN DIAMETER.
6. ALL UTILITY CROSSINGS AND SEPARATIONS SHALL COMPLY WITH STATE AND FEDERAL REGULATIONS.
7. ANY VARIATIONS FROM THIS STANDARD MUST BE APPROVED BY THE CITY ENGINEER.



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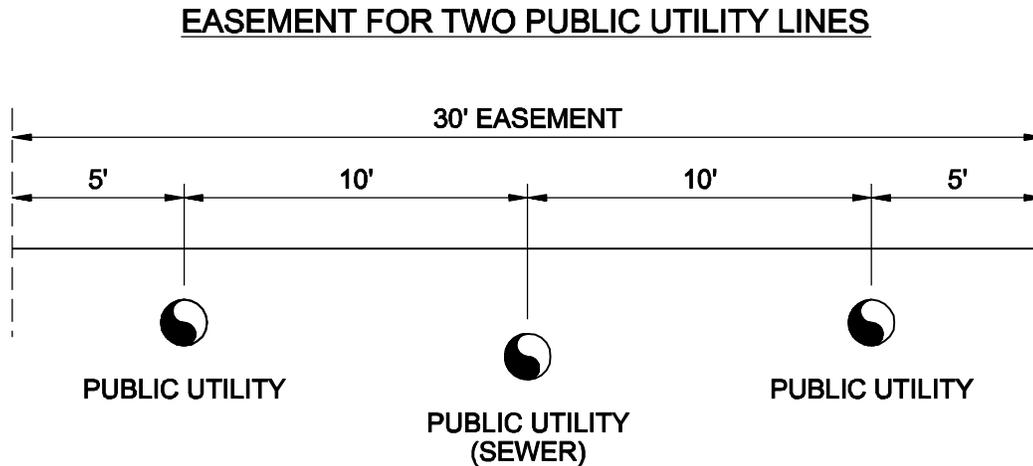
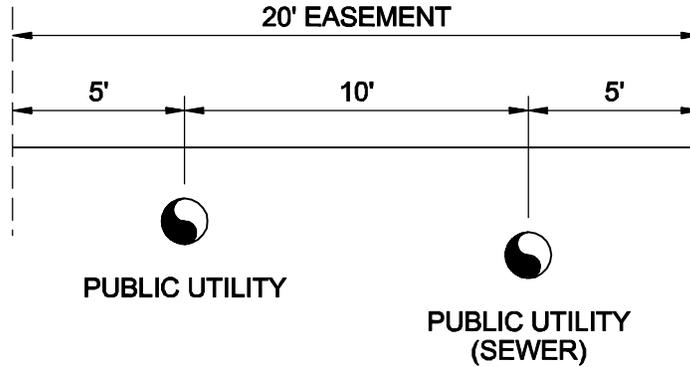
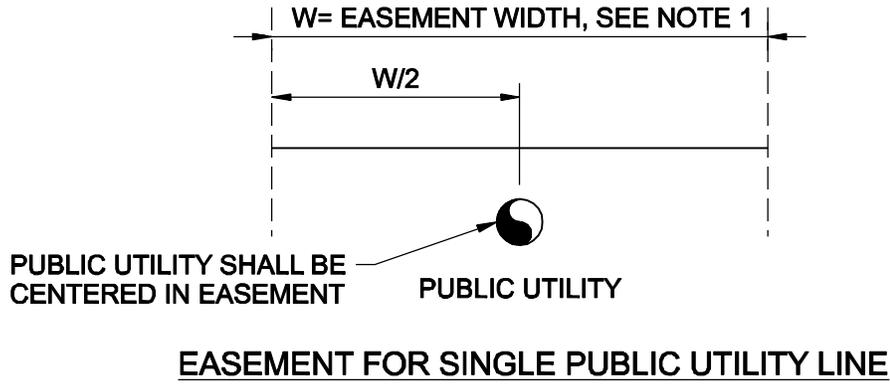
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STANDARD DRAWING TITLE

TYPICAL UTILITY LOCATIONS

NO SCALE
DIVISION
GENERAL
DRAWING NO.

202



NOTES:

1. MINIMUM EASEMENT WIDTHS FOR VARIOUS UTILITIES ARE:
 WATER W=15'
 STORM DRAIN W=15'
 SANITARY SEWER W=15'
2. AN INCREASE IN EASEMENT WIDTH MAY BE REQUIRED FOR ANY PUBLIC UTILITY THAT IS OVER 10' DEEP OR OVER 24" IN DIAMETER.
3. WITH THE EXCEPTION OF UTILITY CROSSINGS, PRIVATE UTILITY LINES MAY NOT BE LOCATED WITHIN THE PUBLIC UTILITY EASEMENTS.
4. NO STRUCTURES, INCLUDING DECKS AND OVERHANG AREAS, MAY ENCROACH INTO THE EASEMENT AREA.



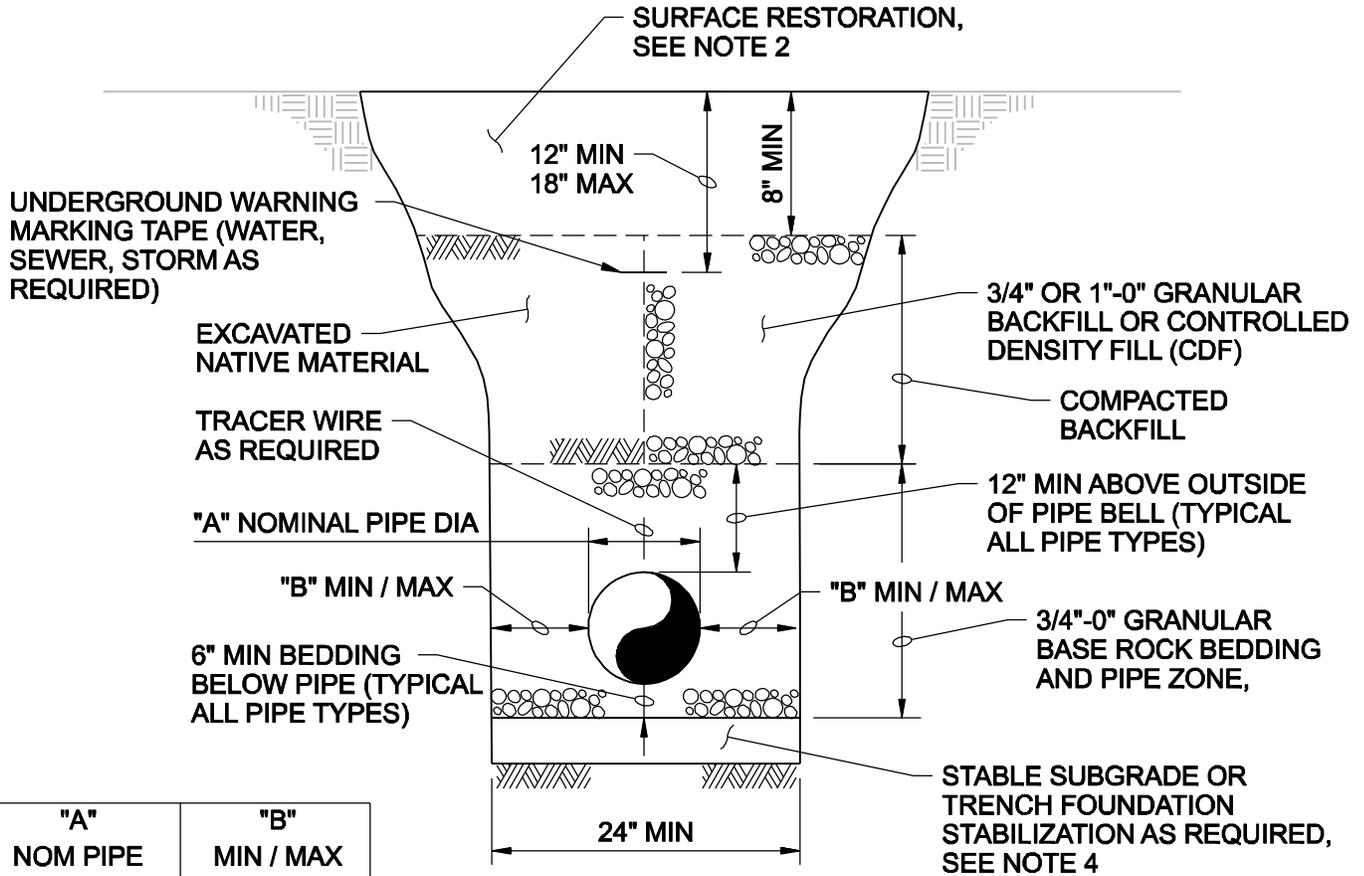
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TYPICAL UTILITY EASEMENT WIDTHS

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204



"A" NOM PIPE DIAMETER	"B" MIN / MAX CLEARANCE
<10"	10" / 18"
12" - 16"	12" / 18"
18" - 21"	16" / 24"
24" - 30"	18" / 30"
>30"	24" / 36"

NOTES:

- SEE PLANS AND STANDARD CONSTRUCTION SPECIFICATIONS FOR TYPICAL TRENCH COMPACTION REQUIREMENTS. BEDDING AND PIPE ZONE SHALL BE COMPACTED TO A MINIMUM 90% PER AASHTO T-180.
- FOR TYPICAL TRENCH SURFACE RESTORATION, SEE STANDARD DRAWINGS 316 AND 318.
- PIPE ZONE SHALL BE EXTENDED TO A MINIMUM 12-INCHES ABOVE OUTSIDE OF THE PIPE BELL, REGARDLESS OF THE TYPE OF PIPE MATERIAL INSTALLED. BEDDING AND PIPE ZONE MATERIAL SHALL BE COMPACTED, AS SPECIFIED, PRIOR TO BACKFILLING THE REMAINDER OF THE TRENCH.
- PIPE BEDDING SHALL BE PLACED ON STABLE SUBGRADE. WHEN REQUIRED, OR AS DIRECTED BY CITY ENGINEER, GRANULAR TRENCH FOUNDATION STABILIZATION SHALL BE PLACED PRIOR TO PLACEMENT OF THE BEDDING. SIZE AND DEPTH ARE DEPENDENT ON EXISTING SOIL CONDITIONS.
- FOR FLEXIBLE PIPE INSTALLATIONS, BOTTOM OF THE TRENCH SHORING SHALL BE ABOVE THE PIPE SPRINGLINE, PRIOR TO COMPACTING BEDDING AND PIPE ZONE MATERIAL UNDER THE PIPE HAUNCHES.



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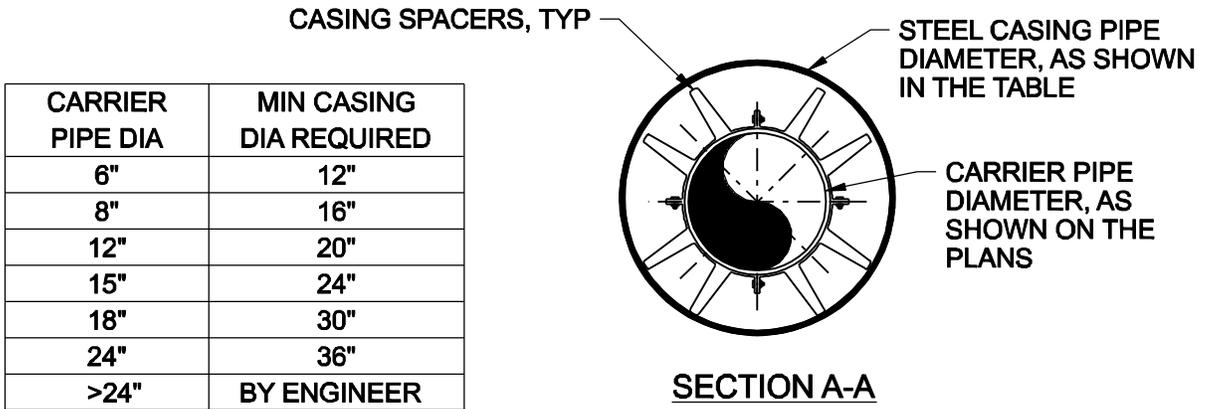
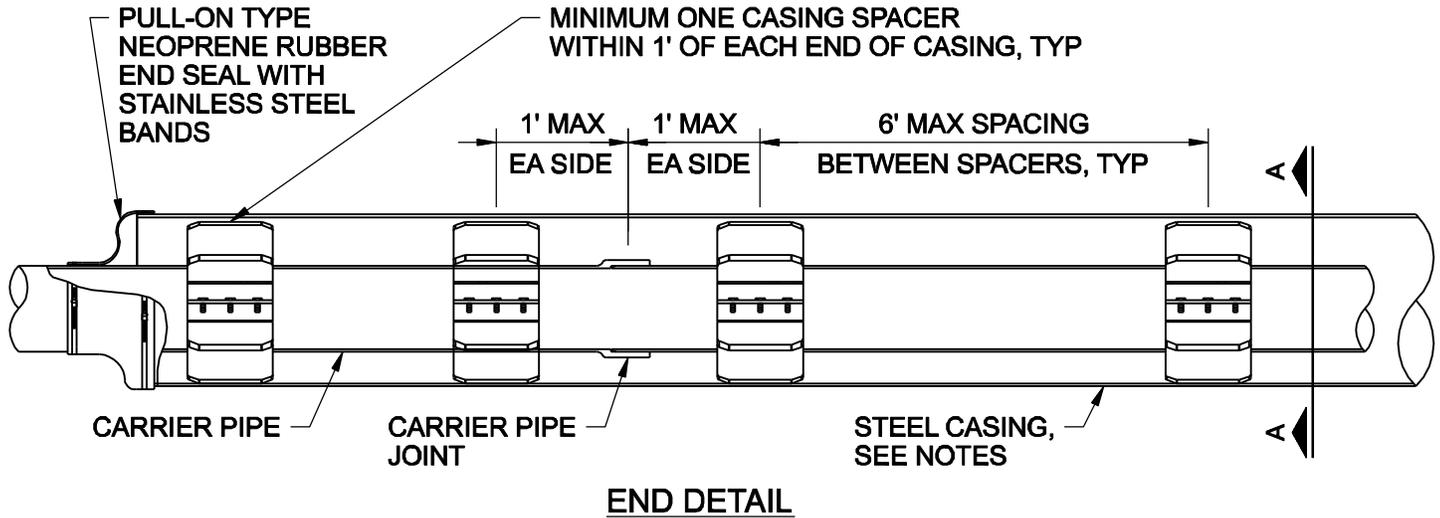
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STANDARD DRAWING TITLE

**TYPICAL TRENCH
DETAIL**

NO SCALE
DIVISION
GENERAL
DRAWING NO.

206



CARRIER PIPE DIA	MIN CASING DIA REQUIRED
6"	12"
8"	16"
12"	20"
15"	24"
18"	30"
24"	36"
>24"	BY ENGINEER

NOTES:

1. BORING SHALL BE AT 90 DEGREES TO ALL CROSSINGS UNLESS OTHERWISE APPROVED. THE BORING OF THE HOLE AND INSTALLATION OF THE CASING PIPE SHALL BE SIMULTANEOUS. BORE HOLE DIAMETER SHALL ESSENTIALLY BE THE SAME AS THE OUTSIDE DIAMETER OF THE CASING PIPE TO BE INSTALLED.
2. STEEL PIPE CASING SHALL BE SMOOTH STEEL PIPE FABRICATED IN SECTIONS IN ACCORDANCE WITH AWWA C201. LENGTHS OF CASING PIPE SHALL BE AS LONG AS PRACTICAL FOR SITE CONDITIONS.
3. JOINTS SHALL CONFORM TO THE REQUIREMENTS OF AWWA C206. JOINTS BETWEEN SECTIONS SHALL BE COMPLETELY WELDED TO THE PRECEDING SECTIONS. PRIOR TO WELDING JOINTS, THE CONTRACTOR SHALL ENSURE THAT BOTH ENDS OF THE CASING SECTIONS BEING WELDED ARE SQUARE.
4. STEEL PIPE CASING WALL THICKNESS SHALL BE AS SPECIFIED. VERIFY CASING SIZES PRIOR TO ORDERING AND SIZING CASING INSULATORS.
5. CASING SPACERS SHALL RESTRAINED-TYPE BOLTED SPACERS AND SHALL HAVE A MAXIMUM SPACING AS SHOWN, OR AS RECOMMENDED BY MANUFACTURER, WHICHEVER IS CLOSER. PIPE CASING SPACERS SHALL BE AS MANUFACTURED BY PIPELINE SEAL AND INSULATOR, INC., ADVANCE PRODUCTS AND SYSTEMS, INC., CALPICO, CASCADE WATER WORKS MFG, INC., OR APPROVED EQUAL.
6. CASING END SEALS SHALL BE SYNTHETIC NEOPRENE RUBBER PULL-ON TYPE END SEALS WITH STAINLESS STEEL BANDS, AS MANUFACTURED BY THE ABOVE MANUFACTURERS, OR APPROVED EQUAL.

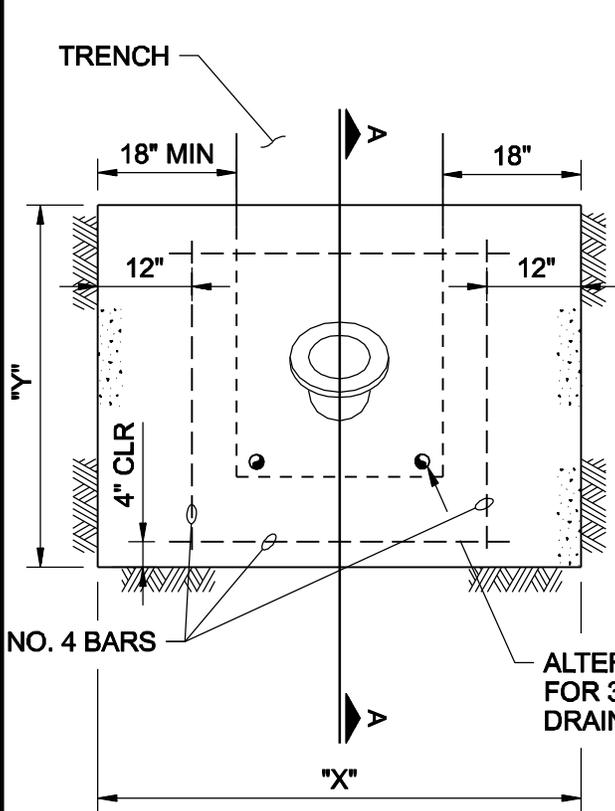


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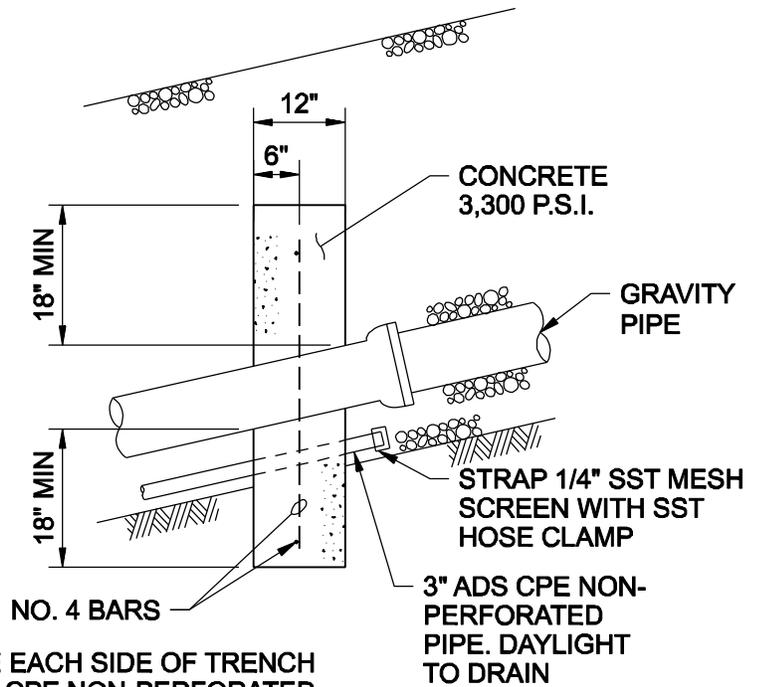
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STANDARD DRAWING TITLE
TYPICAL PIPE CASING DETAIL

NO SCALE
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DRAWING NO.
208



ELEVATION



SECTION A-A

SPACING FOR ANCHOR BLOCK FOR ALL SIZES

SLOPE %	MINIMUM SPACING (ft)
0 - 15	NO ANCHOR REQUIRED
15 - 35	35'
35 - 50	25'
> 50	BY DESIGN ENGINEER

ANCHOR BLOCK DIMENSION TABLE

PIPE DIA	"X", MIN (ft)	"Y", MIN (ft)
6"-10"	5'	4'
12"-15"	6'	5'
> 15"	BY DESIGN ENGINEER	

NOTES:

1. CONCRETE GRAVITY PIPE ANCHOR BLOCK SHALL BE CONSTRUCTED USING FORMS WHEN SANITARY SEWERS, STORM DRAINS, AND OTHER PIPELINES ARE CONSTRUCTED WITH SLOPES OVER 15%. REMOVE FORMS PRIOR TO BACKFILLING TRENCH.
2. FOR PIPES LARGER THAN 15", ANCHOR BLOCK SHALL BE DESIGNED BY THE DESIGN ENGINEER.
3. ANCHOR BLOCK SHALL ALWAYS BE LOCATED ALONG THE BARREL OF THE PIPE AND NOT AT THE JOINT.
4. INSTALL ONE 3" ADS CPE NON-PERFORATED DRAIN PIPE AT BOTTOM OF TRENCH SECTION DOWN THE SLOPE. ALTERNATE 3" DRAIN ON EACH SIDE OF TRENCH SECTION AND DAYLIGHT TO DRAIN. INSTALL 1/4" STAINLESS STEEL MESH SCREEN USING STAINLESS STEEL HOSE CLAMPS OVER UPSTREAM END.
5. OTHER PIPE SLOPE ANCHOR SYSTEMS WILL BE CONSIDERED FOR CITY ENGINEER APPROVAL UPON REQUEST.



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**TYPICAL GRAVITY
PIPE ANCHOR
BLOCK DETAIL**

NO SCALE

DIVISION

GENERAL

DRAWING NO.

210